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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/661,429	09/13/2000	Simon Fafard	99388-US	8408

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EXAMINER

NGUYEN, JOSEPH H

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 12/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/661,429

Applicant(s)

FAFARD, SIMON

Examiner

Joseph Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/14/2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 10-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 December 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook in view of Sugiyama.

Regarding claim 1, Cook discloses on figure 2 substantially all the structures set forth in the claimed invention except said self assembled quantum structures being selected from the group consisting of quantum dots. However, Sugiyama discloses on figure 6 said self-assembled quantum structures being selected from the group consisting of quantum dots 26b. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cook by having said self assembled quantum structures being selected from the group consisting of quantum dots for the purpose of providing a very sharp spectrum when used for an optical semiconductor device as taught by Sugiyama (col. 1, lines 34-36).

Regarding claim 2, Sugiyama discloses on figure 6 said low dimensional quantum structures are zero-dimensional or quasi zero dimensional (quantum dots) structure 26b.

Regarding claim 3, Sugiyama discloses that said low dimensional quantum structures are one-dimensional (quantum wire) structures (col. 1, lines 50-52).

Regarding claim 4, Sugiyama discloses that said one-dimensional or quasi one-dimensional structures are obtained with coupled zero dimensional structures (col. 1, lines 50-52).

Regarding claim 5, Sugiyama discloses that said low dimensional structures are quantum dots obtained by spontaneous island formation during epitaxy of highly strained semiconductor (col. 2, lines 21-30).

Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook and Sugiyama as applied to claim 1 above, and further in view of Romano et al.

Regarding claim 6, Cook and Sugiyama disclose substantially all the structures set forth in the claimed invention except a wetting layer underneath the low dimensional structures. However, Romano et al discloses on figure 2 a wetting layer 220 underneath the low dimensional structures 250. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cook and Sugiyama by having a wetting layer underneath the low dimensional structures for the purpose of promoting smooth, uniform overage of the structure as taught by Romano et al. (col. 4, lines 36-40).

Regarding claim 7, the claim limitation is merely functional language and therefore not given a patentable weight.

Regarding claim 8, Sugiyama discloses on figure 6 said laser diode further comprises an electron emitting layer 23, a hole emitting layer 29, a series of quantum dot layers 26b in an active region disposed between said electron and emitting layers, barrier layers separating each quantum dot layer, and wherein intermediate layers 26a between said active region and said electron and hole emitting layers are provided to tailor the optical and electrical properties of the low dimensionality laser diode to specific requirements.

Regarding claim 9, Sugiyama discloses on figure 6 said layers forming the laser diode consists mainly of gallium, indium, aluminum, arsenic, nitrogen and phosphor.

Allowable Subject Matter

Claims 10-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed on 11/14/2003 have been fully considered but they are not persuasive.

With respect to claim 1, Sugiyama teaches an emission range of at least 100 nm (col. 10, lines 14-15). Therefore, even if it is "sharp" it is as "wide" as applicant claims limitation of at least 100 nm.

Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (703) 308-1269. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone number for

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the organization where this application or proceeding is assigned is (703) 308-7382 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JN

December 12, 2003


GEORGE ECKERT
PRIMARY EXAMINER